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REVIEW ARTICLE

CRITICAL APPRAISAL OF THE PHENOMENAL THERAPEUTIC USES FOR MUTRASHMARI (UROLITHIASIS) COMPILED IN NIGHANTU ADARSHA

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ABSTRACT

Introduction: Kidney is one of the important organs in the human body. Though it is an excretory organ, yet its importance is not only confined to its excretory function. Urine formation is an intricate job. The different solutes present in the urine needs to be expelled out properly. Hence, the body always takes care of the urine composition.The incidence of urolithiasis has been increasing since last decade. Many treatments including surgical interventions are advised to the sufferer. But, the recurrence of stone has pushed the patient in to a hopeless situation. Ayurveda always embraces such sufferers who are left with no hopes.. **Materials and Methods**: *Nighantu Adarsha* -written by Vaidya Bapalal, is searched for the phenomenal therapeutic uses to treat *mutrashmari*(Urolithiasis)**Discussion**:The pathogenesis of *Ashmari* begins with the initial aggravation of *Vata*. Hence *Mutrashmari* is a *vata* dominant *tridoshaja vyadhi.* On analysing the phenomenal therapeutic uses compiled in *Nighantu adarsha* for the treatment of Urolithiasis , it is evident that 17 medicinal plant species have been used in 16 different therapeutic uses. **Result:** A total of 16 Phenomenal therapeutic uses are traced which are the combination of one or two drugs with one or two *anupana*. **Discussion**: These therapeutic uses are processed with different *anupana/sahapana*. Out of 17 plants, 10 plants possess *ushna veerya*, while, remaining 7 plant possess *sheeta veerya.* **Conclusion:** These phenomenal therapeutic uses explained in *Nighantu adarsha* for the treatment of Urolithiasis are really based on rational thought and blended with suitable drugs and *anupana*

Key words: Mutrashmari, Urolithiasis, Kshara

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INTRODUCTION

Urolithiasis is one of the commonest presentations in the clinical settings. Kidney stone disease is affecting about 12% of the world population [1] An approximate of 2 million people in India is affected with this type of disease every year [2]. Statistical data on the incidence of urolithiasis in India is really worrisome due to the sharp increase from 0.9% to 9.0% over 20 years [3].The mechanism of stone formation is a complex process which results from several physicochemical events including super saturation, nucleation, growth aggregation and retention of urinary stone constituents within tubular cells [4].The occurrence of this condition in some states of India is so high that they are referred to as stone belt [5]. Different modalities are available for treating this condition. However, the chances of recurrence is quite common. The concept of urolithiasis is well known to the practioners of Ayurveda a way back. Almost all the classics of Ayurveda, right from *Charaka samhita* to *Yogaratanakara,* have clearly described the disease in the name of *mutrashamari.* Intersestingly, *Charaka* delineated this disease under *mutrakricchra adhyaya*(chapter on dysuria)[6] , while, *Sushruta* deemed it as one among 8 deadlier diseases(*astha maha gada*)[7] . According to Ayurveda, *Mutrashmari* is of four types viz, *vataja, pittaja, kaphaja* and *shukraja*[8]. Among them, *vataja, pittaja* and *kaphaja ashmari* are primarily related to urinary system. Researchers have put great effort to compare these 3 types with the different types of stones explained in modern medicine. According to them, *vataja ashmari* is calcium oxalate stone, *pittaja ashmari* can be uric acid stone/urate stone/cysteine stone and *kaphaja ashmari* is phosphate stone based on the characters explained in Ayurveda [9]. Ayurveda therapeutics recommends a bunch of therapeutic uses to treat them. Though the therapeutic uses don't form the complete management of a condition, yet, they influence the condition to a greater extent by reducing the pathogenesis. Most of the therapeutic uses are the combination of one or two botanicals with a proper vehicle (*anupana*). Regular administration of such combination can, sometimes, yield good results when the disease is in its initial stages of pathogenesis. The vehicle (*anup*ana) used, hits the target a better way.

In spite of such valuable contribution to the field of health care system, Ayurveda has never reached the culminating point of appreciation in modern India. Changes in the life style and advancement in the technology have influenced the people to lose faith in Ayurvedic therapeutics. The people of modern times, demand the valid explanation with an evidence by ignoring the '*apta pramana'* –which is one of

the greatest tool of validation that the true followers of Ayurveda would believe in. Of late, the therapeutic uses mentioned for different diseases in Ayurveda are at stake. The author of *Nighantu adarsha* belongs to Gujarat which is also considered as a part of stone belt in India. Hence, he could have compiled the phenomenal therapeutic uses for *mutrashmari* in his work

The concept of lithotriptic/anti urolithiatic activity in Ayurveda has been a topic of great criticism. Many people of modern times disagree with the fact that the botanicals can act as litholytic and they believe the plants mentioned in therapeutic uses to cure renal stones are of no use. The Scientific validation is, perhaps, the only way to rebuild the trust and faith in Ayurveda. It is of no surprise that many botanicals have proved their biological activity that matches with the activity described in Ayurvedic therapeutics. Such type of botanicals gain lot of importance in modern times and help in discarding the myths revolving around them. Hence, this review is an earnest attempt to explore the phenomenal therapeutic uses compiled in *Nighantu adarsha*, to treat the urolithiasis and to validate them with the help of research studies.

Materials and Methods:

Materials:

Text focussed primarily:

Nighantu adarsha(vol-1 and vol-2)available in print version being authored by Vaidya Bapalal ji published by Chaukhambha Bharati academy, Varanasi was considered for the study

Texts focused additionally:

Relevant literature on the plants mentioned in the therapeutic uses, is collected from the text book on *Dravyaguna,* and *Bhavaprakasha nighantu*

Internet access

Information on authentic botanical sources is collected from relevant source

Methods

The therapeutic uses containing one or two drugs with one or two anupana were only included in the study. The true botanical sources of the plants were collected from the plant list (www.theplantlist.com) and the useful parts of all the plants were collected from the relevant literature. The properties of these plants were tabulated. Experimental study done on these plants were consulted to substantiate their effect in urolithiasis (*mutrashmari*) and the same is taken as a basis for the appraisal.

Table-1: Phenomenal therapeutic uses compiled in *Nighantu adarsha*

S.No	Therapeutic use[10][11]	Net effect on *dosha*
01	*Brihati* and *Kantakari* root powder with yogurt	*Vatahara*
02	*Patala kshara*	*Vata kaphahara*
03	*Tilakshara* is given with honey and milk	*Vatahara*
04	*Punarnava* root given with hot milk	*Vata kapha shamaka*
05	*Apamarga kshara* given with sheep urine	*Kaphahara*
06	*Varuna mula kvatha* given with *Varuna mula churna*	*Kapha vata shamaka*
07	*Gokshura bija churna* given with honey and sheep milk	*Vatahara*
08	*Ashoka bija churna* is given with water	*Kapha pittahara*
09	Milk processed with *Haritaki* fruit kernel	*Vatahara*
10	*Bibhitak* seed powder with honey	*Kaphahara*
11	*Tumbi bija churna* given honey and sheep milk	*Kaphapittahara*
12	*Karkati bija* with *Draksha rasa*	*Pittashamaka*
13	*Kusumba bija* with *Draksha rasa*	*Pitta shamaka*
14	*Suryamukhi mula* given with cow`s milk	*Pittashamaka*
15	Goat`s milk processed with *Yuthika mula*	*Pittashamaka*
16	*Karaveera patra kshara* with sheep`s milk	*Vatahara*

Table -2: Botanical name, family and the botanicals of the plants mentioned in the phenomenal therapeutic uses

Plant	Botanical name[12]	Family[12]	Useful part
Brihati	*Solanum indicum* L	Solanaceae	Root
Kantakari	*Solanum surattense* Burm f	Solanaceae	Root
Patala	*Stereospermum chelonoides*(L.f)DC	Bignoniaceae	Leaf
Tila	*Sesamum indicum* L	Pedaliaceae	Whole plant
Punarnava	*Boerhavia diffusa* L	Nyctaginaceae	Root
Apamarga	*Achyranthes aspera* L	Amaranthaceae	Whole plant
Varuna	*Crateva nurvula* Buch-Ham	Capparaceae	Root
Ashoka	*Saraca asoca* (Roxb.)Willd	Leguminosae	Seed
Gokshura	*Tribulus terrrestris* L	Zygophyllaceae	Fruit(seed)

Haritaki	*Terminalia chebula* Retz	Combretaceae	Fruit kernel
Bibhitak	*Terminalia bellirica* (Geartn).Roxb	Combretaceae	Fruit(seed)
Tumbi	*Lagenaria siceraria*(Molina)Standl	Cucurbitaceae	Seed
Karkati	*Cucumis sativus* L	Cucurbitaceae	Seed
Kusumba	*Carthamus tinctorius* L	Compositae	Seed
Suryamukhi	*Helianthus annuus* L	Compositae	Root
Yuthika	*Jasminum auriculatum* Vahl	Oleaceae	Root
Karaveera	*Nerium oleander* L	Apocynaceae	Leaf

Table -3: Properties of the plants mentioned in the phenomenal therapeutic uses

Plant	***Guna***	***Rasa***	***Vipaka***	***Veerya***	**Ref(Vol/Pg)**
Brihati	*Laghu, Ruksha,Teekshna*	*Katu,Tikta*	*Katu*	*Ushna*	D.G.V 2/283
Kantakari	*Laghu,Ruksha,Teekshna*	*Tikta,Katu*	*Katu*	*Ushna*	D.G.V 2/281
Patala	*Laghu,Ruksha*	*Tikta, Kashaya*	*Katu*	*Ushna*	D.G.V 2/224
Tila	*Guru, snigdha*	*Madhura*	*Madhura*	*Ushna*	D.G.V 2/121
Punarnava	*Laghu,Ruksha*	*Madhura,Tikta,Kashaya*	*Madhura*	*Ushna*	D.G.V 2/631
Apamarga	*Laghu,Ruksha,Teekshna*	*Katu,Tikta*	*Katu*	*Ushna*	D.G.V 2/543
Varuna	*Laghu,Ruksha*	*Tikta,Kashaya*	*Katu*	*Ushna*	D.G.V 2/653
Ashoka	*Laghu, Ruksha*	*Kashaya, Tikta*	*Katu*	*Sheeta*	D.G.V 2/618
Gokshura	*Guru,Snigdha*	*Madhura*	*Madhura*	*Sheeta*	D.G.V 2/633
Haritaki	*Laghu,Ruksha*	*Pancha rasa*	*Madhura*	*Ushna*	D.G.V 2/755
Bibhitak	*Laghu,Rusha*	*Kashaya*	*Madhura*	*Ushna*	D.G.V 2/240
Tumbi	*Laghu,Ruksha*	*Tikta*	*Katu*	*Sheeta*	D.G.V 2/380
Karkati	*Guru,Ruksha*	*Madhura*	*Madhura*	*Sheeta*	D.G.V 3/206
Kusumba	*Guru,Snigdha*	*Kashaya,Madhura*	*Madhura*	*Sheeta*	D.G.V 3/169
Suryamukhi	*Ruksha,Sara*	*Katu,Tikta,Madhura kshara*	*Madhura*	*Sheeta*	N.A 1/778
Yuthika	*Laghu*	*Tikta,Kashaya,Madhhura*	*Katu*	*Sheeta*	B.P.N.—479
Karaveera	*Laghu,Ruksha,Teekshna*	*Tikta Katu*	*Katu*	*Ushna*	D.G.V. 2/212

D.G.V-Dravyaguna vignana, N.A-Nighantu adarsha, B.P.N-Bhavaprakasha nighantu

Table -4: *Anupana/sahapana* used in therapeutic uses

S.no	*ANUPANA*	ACTION ON *DOSHA* [27]
01	Goat`s milk	*Tridosha hara*
02	Sheep`s milk	*Pittakapha vardhaka*
03	Yogurt	*Vatanashaka, Pitta prasadaka*
04	Cow`s urine	*Vata kapha hara*
05	Honey	*Kapha shamaka, Vata vardhaka*
06	Cow`s milk	*Vata Pitta hara*
07	Water	*Tridosha shamaka*
08	Sheep`s urine	*Vata kaphahara*
09	Grape juice	*Vatapittahara*
10	*Varuna kvatha*	*Kapha Vatahara*

DISCUSSION

The term *ashmari* is etymologically derived as *"Ashmam rati*" means that which take the form of a stone [28]. The pathogenesis of *Ashmari* begins with the initial aggravation of *Vata*. Hence *Mutrashmari* is a *vata* dominant *tridoshaja vyadhi.* It occurs when aggravated *vata* along with other *dosha* viz *pitta* and *kapha* vitiates *mutra* in *mutravaha srotas.* This leads to the *sroto dusti* referred to as *sanga*(obstruction).Whenever the passage is obstructed, *vimarga gamana* of *vata* takes place causing pain all along the passage, which is generally presented as a referred pain. The treatment of *ashmari*, based on the pathogenesis, is to break down the *dosha dushya samurchana.* Hence, the goal of the treatment is focused mainly on relieving the obstruction and regularising the *vata dosha*. Ayurveda believes in the fact that *mutra* is usually dominant in agni and jala tatva and its main function is *kleda vahana*. According to *Pancha mahbhoota siddhanta,* when anything influences the agni and jala in urine, there occurs different forms of *mutra vikara*. In *mutrashmari*, either *agni* or *jala* will be decreased to a point where the *kleda* present in *mutra* starts crystalizing in to a compact mass. The drugs or therapeutic uses which augment the *agni* or *jala tatva* will help in breaking or dissolving the compact mass. Drugs that possess *teekshna* and *ushna guna* augment the *agni tatva*, while, the drugs with *snigdha* and *sheeta guna* will augment *jala tatva*.

On analysing the phenomenal therapeutic uses compiled in *Nighantu adarsha*, it is evident that 17 medicinal plant species have been used by different authors of Ayurveda. These are processed with different *anupana/sahapana*.

Out of 17 plants, 10 plants possess *ushna veerya*, while, remaining 7 plant possess *sheeta veerya.*

On the plants:

The plants that augment agni tatva*: Brihati* (*Solanum indicum* L), *Kantakari (Solanum surattense* Burm f), *Patala* (*Stereospermum chelonoides*(L.f)DC) , *Tila*(*Sesamum indicum* L),Punarnava(*Boerhavia diffusa* L),*Apamarga*(*Achyranthes aspera* L), *Varuna*(*Crateva nurvula* Buch-Ham) *Haritaki*(*Terminalia chebula* Retz),*Bibhitaki*(*Terminalia bellirica* (Geartn).Roxb) and *Karaveera* (*Nerium oleander* L) .

The plants that augment jala tatva: *Ashoka* (*Saraca asoca* (Roxb.)Willd), *Gokhura*(*Tribulus terrrestris* L), *Tumbi*(*Lagenaria siceraria*(Molina)Standl), *Karkati*(*Cucumis sativus* L) *Kusumba*(*Carthamus tinctorius* L), *Yuthika*(*Jasminum auriculatum* Vahl) and *Suryamukhi* (*Helianthus annuus* L)

Studies on the plants supporting and suggesting the anti urolithiatic activity: *Brihati* (*Solanum indicum* L)[13] *Kantakari* (Solanum surrattense Burn f)[14],*Punarnava* (*Boerhavia diffusa* L)[15], *Apamarga*(*Achyranthes aspera* L)[16],*Varuna*(*Crateva nurvula* Buch-Ham)[17], *Ashoka*(*Saraca indica* L.)[18],Gokshura(*Tribulus terrrestris* L)[19],*Haritaki*(*Terminalia chebula* Retz)[20], *Bibhitak*(Terminalia bellirica (Geartn).Roxb)[21],*Tumbi*(*Lagenaria siceraria* (Molina) Standl)[22],*Karkati*(*Cucumis sativus* L)[23], *Suryamukhi*(*Helianthus annuus* L)[24]*Yuthika* (*Jasminum auriculatum* vahl)[25] and *Karaveera*(*Nerium oleander* L)[26]

On the *Anupana*:

A total of 10 *anupana* of different origin are mentioned in therapeutic uses. Most of the drugs are given with the animal products like milk of different animals such as cow, sheep and goat, yogurt, urine and honey. Among 16 therapeutic uses, 12 therapeutic uses contain animal products as an *anupana*, while, 3 therapeutic uses include plant source as an *anupana* (vehicle) and remaining one is given with water. Dairy products such as milk and yogurt are considered as the good source of calcium. Calcium intake will help in lowering the oxalate levels [28]. This holds true to sheep and goat`s milk as well. Another common *anupana* is the honey. Honey has anti - microbial, anti-inflammatory and anti-oxidant properties [29]. Though there is no clear evidence that honey is useful in urinary stones, yet, the anti-bacterial and anti-oxidant activity could be the supportive facts. Interestingly, Unani medicine believes that pure honey acts as lithotriptic. As far as urine of different animals is concerned, *arka* of Cow`s urine has shown the anti urolithiatic activity [30], but, there is no data available on the anti urolithiatic activity of sheep urine.

On the therapeutic uses:

A total of 16 therapeutic uses for *mutrashmari* can be traced from *Nighantu adarsha*. These therapeutic uses are based on the appropriate combination of the main drug and the *anupana.* Few therapeutic uses are based on the additive effect or super additive effect **(***ushna virya dravyas* are brought together with *ushna anupana, sheeta veerya dravyas* with *sheeta anupana***)** . Some of the therapeutic uses are based on the alkaline property. While, few others on diuretic property. Interestingly, some of the therapeutic uses include two vehicles (*anupana*)in order to antagonise the unwanted effect of the drug

CONCLUSION:

Nighantu adarsha is one of the greatest contributions of Vaidya Bapalal to the field of Ayurveda in modern times. On analysing, it contains 16 therapeutic uses compiled from different classical text and other lexicons for the treatment of *mutrashmari.* A probe into the experimental study of the plants mentioned in the therapeutic uses, has revealed the anti urolithiatic activity of all the plants except *Patala* (Stereospermum chelonoides (L.f)DC.) and *Tila* (Sesamum indicum L). As far as *Kusumba* is concerned, research in other countries such as China has proved the anti urolithiatic activity of Flos carthimi, which is the dry floret of *Carthamus tinctorius* L(*Kusumba*). This proves that the therapeutic uses compiled in *Nighantu adarsha* for the treatment of *mutrashmari* (Urolithiasis), are really based on appropriate thought and are blended with suitable drugs along with right *anupana*. This review will help the researchers to look up to prepare new formulations for the treatment of different forms of *mutrashmari* (urolithiasis).

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